

Hays Chemical Distribution Limited, Chemical Distribution and Services
Division, Rawdon House, Green Lane, Yeadon, Leeds LS19 7XX.
Tel: 01132 505811 Fax: 01132504886.
CHEMICAL EMERGENCY ONLY (N.C.E.C. CULHAM) TEL: 01865 407333.

Version No. 4 (Print date 13/02/1998) MSDS Code No: MIPA100

Product Name: ISOPROPANOL, all grades.
Chemical Name: PROPAN-2-OL

Fire & Explosion Hazard Data

Flash Point: 10°C-12°C
Hazardous Combustion Products: CARBON MONOXIDE

Auto-Ignite Temperature: 425°C

Physical & Chemical Properties

Chemical Synonyms: ISOPROPYL ALCOHOL	DIMETHYL CARBINOL
Molecular Mass: 60.09	Lethal Dosage: 5840 mg/Kg (rat)
Solubility In Water: COMPLETE	Specific Gravity @ 20°C: 0.786 Kg/l
Vapour Density: 2.07 air=1	Vapour Pressure: 33.0 mmHg 20°C
Freezing Point °C: -89.5°C	Boiling Point °C: 82°C-83°C
Viscosity: 2.43 cP 20°C	pH: N/A

Formula: (CH₃)₂CHOH

Hazard Classification Information

Risk Phrases: 11, 36.	
Safety Phrases: 7, 16, 39.	
Primary Risk: HIGHLY FLAMMABLE	Secondary Risk: IRRITANT
S.I. Number: 1219	Conveyance Class: 3
ADR Class: 3, FLAMMABLE	ADR HIN: 33
Trencard No: TEC(R)-S44	EINECS No: 200-661-7
IATA Special Provisions: NOT APPLICABLE	IMDG Code (Page): 3244
UN Number: 1219	IMCO Class: 3.2, FLAMMABLE
CAS Number: 67-63-0	Packing Group: II
Hazchem Code: 2(Y)E	UK Customs Number: CUS 22439

CHIP Risk Phrases

HIGHLY FLAMMABLE.
IRRITATING TO EYES.

CHIP Safety Phrases

KEEP CONTAINER TIGHTLY CLOSED.
KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.
WEAR EYE/FACE PROTECTION.

Composition/Information On Ingredients

CONTAINS MORE THAN 75% ISOPROPANOL (INCLUDING SOLVENT BLENDS).

OTHER GRADES:- IPS-1 (MIN PURITY 99.7%w).
IPS-C (MIN PURITY 99.7%w LOW ODOUR).
IPS-2 (IPA/WATER AZEOTROPE).
IPS-3 (IPA/METHANOL MIXTURE).
IPA-XG (FOOD GRADE IPA).

Hazards Identification: Physical and Environmental

NON HAZARDOUS TO LIVING RESOURCES (4).
A BIODEGRADABLE SUBSTANCE
SEE ECOLOGICAL INFORMATION.

Material Safety Data Sheet

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Hazards Identification: Adverse human health affects

LIQUID AND VAPOUR IRRITATING TO EYES, SKIN AND MUCOUS MEMBRANES.
VAPOUR MAY CAUSE NARCOSIS AND SYSTEMIC EFFECTS- SEE TOXICOLOGICAL INFORMATION

First Aid Measures: Inhalation

REMOVE FROM EXPOSURE. KEEP WARM AND AT REST. IF THERE IS RESPIRATORY DISTRESS GIVE OXYGEN.
IF RESPIRATION STOPS OR SHOWS SIGNS OF FAILING, APPLY ARTIFICIAL RESPIRATION. DO NOT USE MOUTH TO MOUTH VENTILATION.
OBTAIN MEDICAL ATTENTION URGENTLY.

First Aid Measures: Skin Contact

IMMEDIATELY WASH WITH PLENTY OF WATER, PREFERABLY UNDER A SHOWER IF AFFECTED AREA IS LARGE ENOUGH TO WARRANT THIS.
USE SOAP IF AVAILABLE. REMOVE CONTAMINATED CLOTHING AND THOROUGHLY CLEAN AND DRY BEFORE RE-USE.
OBTAIN MEDICAL ATTENTION IF IRRITATION PERSISTS.

First Aid Measures: Eye Contact

IRRIGATE THE EYE THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES, HOLDING THE EYELIDS APART IF NECESSARY.
OBTAIN MEDICAL ATTENTION.

First Aid Measures: Ingestion

WASH OUT MOUTH WITH WATER AND GIVE $\frac{1}{2}$ PINT WARM WATER TO DRINK. OBTAIN MEDICAL ATTENTION URGENTLY.
DO NOT INDUCE VOMITING. TREATMENT MAY BE NEEDED FOR SHOCK OR PAIN.

First Aid Measures: Medical Assistance

SYMPTOMATIC TREATMENT AND SUPPORTIVE THERAPY AS INDICATED.
FOLLOWING ACUTE INTOXICATION, TREATMENT FOR HYPOLYCAEMIA, HYPOTHERMIA AND EXTENSOR RIGIDITY MAY BE NECESSARY.

Fire-Fighting Measures: Special Protective Equipment

HIGHLY FLAMMABLE LIQUID. TOXIC AND EXPLOSIVE RISK IN A FIRE.
THEREFORE FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL BODY PROTECTIVE CLOTHING (8).
UNDER SEVERE CIRCUMSTANCES, CONSIDER EVACUATION (8).

Fire-Fighting Measures: Suitable Extinguishing Media

SELECT EXTINGUISHING MEDIUM APPROPRIATE TO OTHER MATERIALS INVOLVED IN AND/OR TO THE CIRCUMSTANCES OF THE FIRE.
USE FOG EQUIPMENT- IN THE ABSENCE OF FOG EQUIPMENT A FINE SPRAY MAY BE USED (8).
FOR A SMALL FIRE- USE CARBON DIOXIDE, DRY CHEMICAL POWDER, ALCOHOL RESISTANT FOAM OR WATER FOG.
FOR A LARGE FIRE - USE ALCOHOL RESISTANT FOAM OR WATER FOG.
DO NOT USE WATER JETS!
KEEP CONTAINERS COOL WITH WATER SPRAY.

Fire-Fighting Measures: Special Exposure Hazards

HIGHLY FLAMMABLE LIQUID. STABLE UNDER NORMAL CONDITIONS. FLASH Pt. 10-12°C (ABEL CLOSED CUP), EXPLOSIVE LIMITS 2-12% v/v.
THE VAPOUR IS HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND, HENCE DISTANT IGNITION IS POSSIBLE.
DECOMPOSES IN HEATED AIR TO LIBERATE TOXIC FUMES OF CARBON MONOXIDE.
THE VAPOURS READILY FORM IGNITABLE AND EXPLOSIVE MIXTURES WITH AIR AT NORMAL TEMPERATURES.

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Accidental Release Measures: Methods For Cleaning Up

SMALL SPILLAGES:- ALLOW SPILT SUBSTANCE TO EVAPORATE. FLUSH THE CONTAMINATED AREA WITH PLENTY OF WATER AND POSSIBLY DETERGENT.
LARGE SPILLAGES- CONTAIN WITH SAND OR EARTH AND TRANSFER TO SUITABLE CONTAINER FOR SUBSEQUENT DISPOSAL BY A LICENCED CONTRACTOR.
FLUSH THE SITE OF THE SPILLAGE WITH COPIOUS AMOUNTS OF WATER- SEE DISPOSAL DANGERS.
DISPOSE OF HAZARDOUS WASTE IN ACCORDANCE WITH WASTE DISPOSAL AND WATER AUTHORITY REGULATIONS.
SEE DISPOSAL CONSIDERATIONS AND ENVIRONMENTAL PRECAUTIONS.

Accidental Release Measures: Personal Precautions

AVOID CONTACT WITH THE LIQUID. VENTILATE THE AREA TO DISPEL RESIDUAL VAPOURS.
PROTECTIVE CLOTHING AND (UNDER SEVERE CONDITIONS) BREATHING APPARATUS SHOULD BE WORN WHEN DEALING WITH SPILLAGE (8).
REMOVE ALL SOURCES OF IGNITION.

Accidental Release Measures: Environmental Precautions

IF SIZE OF SPILLAGE WARRANTS AND HAS CONTAMINATED WATER COURSES, DRAINS OR VEGETATION- ADVISE APPROPRIATE AUTHORITIES.
CONSIDER DILUTION OR ARTIFICIAL AERATION IN SEVERE CASES.
EVACUATE PERSONNEL FROM THE AREA.

Storage And Handling: Storage

STORE IN A COOL, DRY, WELL VENTILATED AREA, AWAY FROM INCOMPATIBLE CHEMICALS OR MATERIALS - SEE STABILITY AND REACTIVITY.
AVOID EXPOSURE TO DIRECT SUNLIGHT, SOURCES OF HEAT OR IGNITION AND A BUILD-UP OF STATIC ELECTRICITY.
RECOMMENDED MAXIMUM STORAGE TEMPERATURES- 30°C, NO MINIMUM.
ENSURE PIPELINES AND METALLIC PARTS OF TANKS ARE EARTHED BEFORE AND DURING UNLOADING.
OBTAIN SPECIALIST ADVISE IN THE CHOICE OF ELECTRICAL EQUIPMENT.
KEEP CONTAINERS TIGHTLY CLOSED - SEE FIREFIGHTING MEASURES.
STORE IN STAINLESS STEEL OR MILD STEEL CONTAINERS.
DO NOT STORE IN ALUMINIUM
FOR SEALS AND GASKETS USE COMPRESSED ASBESTOS, BUTYL RUBBER, PTFE.

Storage And Handling: Handling

EXPOSURE BY INHALATION OR SKIN CONTACT SHOULD BE MINIMISED BY GOOD INDUSTRIAL HYGIENE PRACTICE.
WEAR APPROPRIATE PROTECTIVE CLOTHING- SEE EXPOSURE CONTROL.
SAFETY SHOWERS AND EYEBATHS SHOULD BE AVAILABLE IN AREAS WHERE ACCIDENTAL EXPOSURE IS POSSIBLE.
THE PRODUCT SHOULD BE CONTAINED IN A CLOSED SYSTEM AWAY FROM OXIDIZING AGENTS.
PRECAUTIONS MUST BE TAKEN WHEN PERFORMING OPERATIONS SUCH AS EVAPORATION OR DISTILLATION, ON PROLONGED STORED SOLVENT BLENDS.
SEE OTHER INFORMATION.

Exposure Control/Personal Protection: Hand Protection

WEAR SUITABLE IMPERVIOUS GLOVES.

Exposure Control/Personal Protection: Eye Protection

WEAR CHEMICAL GOGGLES.

FOR OPERATIONS WHERE SPLASHING MAY OCCUR, WEAR A VISOR OR FACE MASK.
EYEBATHS SHOULD BE PROVIDED AT PLACES WHERE ACCIDENTAL EXPOSURE MAY BE POSSIBLE.

Exposure Control/Personal Protection: Skin Protection

WEAR IMPERVIOUS BOOTS AND POLYCOTTON OVERALLS.

WHERE SIGNIFICANT EXPOSURE IS POSSIBLE (eg IN DEALING WITH SPILLAGE OR FIRE).

WEAR PVC SUIT.

SHOWERS SHOULD BE PROVIDED AT PLACES WHERE ACCIDENTAL EXPOSURE MAY OCCUR.

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Exposure Control/Personal Protection: Respiratory Protection

OCCUPATIONAL EXPOSURE LIMITS ASSIGNED BY HSE(1) AND ACGIH(2):-
OES-LTEL= 400ppm (980mg/m³), OES-STEL= 500ppm (1225mg/m³), SK - ABSORBED BY SKIN HSE(1).
IN THE EVENT WHERE SIGNIFICANT EXPOSURE IS POSSIBLE, SUCH AS FIRE,
WEAR SELF-CONTAINED BREATHING APPARATUS - SEE STABILITY AND REACTIVITY.

Physical And Chemical properties: Appearance

COLOURLESS LIQUID.

Physical And Chemical properties: Odour

ETHEREAL, WINE-LIKE.

Stability And Reactivity: Condition to avoid

PREVENT EXPOSURE TO DIRECT SUNLIGHT, HEAT OR IGNITION SOURCES AND STATIC BUILD-UP. SEE FIRE-FIGHTING MEASURES.

Stability And Reactivity: Materials to avoid

REACTS DANGEROUSLY WITH OXIDIZING AGENTS, NITRIC ACID, POTASSIUM TERT-BUTOXIDE, ALUMINIUM AND SODIUM.
REACTIONS WITH THE PRODUCT CAN BE VIOLENT OR EXPLOSIVELY REACTIVE (8).
PRESENCE OF KETONES MAY PRODUCE EXPLOSIVE PEROXIDES- SEE OTHER INFORMATION.

Stability And Reactivity: Hazardous Decomposition products

DECOMPOSES IN HEATED AIR TO PRODUCE TOXIC FUMES OF CARBON MONOXIDE AND/OR CARBON DIOXIDE.
AFTER PROLONGED STORAGE OF BLENDS CONTAINING TRACES OF KETONE, OXYGEN MAY BE FORMED, WHICH IS A FIRE HAZARD.

Toxicological Information

ACUTE EFFECTS:-

LIQUID AND VAPOUR CAUSES IRRITATION TO EYES, SKIN, RESPIRATORY AND DIGESTIVE TRACTS.
MAY BE ABSORBED THROUGH THE SKIN.
MAY BE ABSORBED SYSTEMICALLY BY INHALATION OR INGESTION AFTER SIGNIFICANT EXPOSURE.
CAN ENTER THE BODY BY INGESTION CAUSING DEPRESSION OF THE NERVOUS SYSTEM, DIARRHOEA, NAUSEA, VOMITING, HEADACHE, DROWSINESS.
SIGNIFICANT DOSAGE MAY LEAD TO HYPOTHERMIA, HYPOLYCAEMIA AND LOSS OF CONSCIOUSNESS AND EVEN DEATH.
100mls COULD BE FATAL.
MAY CAUSE DIZZINESS, NARCOSIS OR COMA WHEN INHALED.

CHRONIC EFFECTS:-

LIQUID HAS A DEGREASING ACTION ON THE SKIN AND MAY PRODUCE A DRY, SCALEY AND FISSURED DERMATITIS.

Ecological Information

NON-HAZARDOUS TO LIVING RESOURCES 96 hr LC50 > 1000mg/l (4).
ECOTOXICITY: AN INSIGNIFICANT TOXIC HAZARD TO AQUATIC ORGANISMS
NO EVIDENCE OF BIOACCUMULATION OR TAINING OF SEAFOOD(4)
PARTITIONING: LOG P OCTANOL/WATER = 0.1
PRODUCT IS READILY BIODEGRADABLE. BOD20 => 78% OF THOD.
96h LC50 9600mg/l (FATHEAD MINNOW), 24h EC50 > 1000mg/l (DAPHNIA).
TOXICITY THRESHOLD CONCENTRATION (CELL MULTIPLICATION INHIBITION TEST) 1800mg/l.

Disposal Considerations: Disposal Dangers

TREAT AS FOR SPILLAGES. WEAR APPROPRIATE PROTECTIVE CLOTHING- SEE ACCIDENTAL RELEASE MEASURES.
ENSURE THE CONTAMINATED AREA IS FLUSHED WITH PLENTY OF WATER. AQUEOUS SOLUTIONS HAVE A LOW FLASH POINT UNLESS VERY DILUTE.
CARE SHOULD BE TAKEN TO ENSURE ACCIDENTAL MIXING WITH OXIDIZING AGENTS, IN DRAINS, IS AVOIDED.
A POTENTIAL TOXIC AND EXPLOSIVE HAZARD WILL BE CREATED IF THE SPILT LIQUID ENTERS THE SURFACE DRAINS.

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Disposal Considerations: Disposal Methods

TREAT AS FOR SPILLAGES- SEE ACCIDENTAL RELEASE MEASURES.

TRANSFER ANY HAZARDOUS WASTE TO CONTAINERS OF WATER.

DISPOSE OF HAZARDOUS WASTE IN ACCORDANCE WITH SPECIAL WASTE REGULATIONS- (CONTROL POLLUTION ACT REGULATIONS 1980).
DO NOT DUMP INDISCRIMINATELY. IT IS POSSIBLE TO DESTROY HAZARDOUS WASTE BY BURNING IN A SUITABLE INCINERATOR.

Transport Information

SI 1992/743 THE ROAD TRAFFIC (CARRIAGE OF DANGEROUS SUBSTANCES IN ROAD TANKERS AND TANK CONTAINERS) REGULATIONS.

SI 1993/1746 THE CHEMICALS (HAZARD INFORMATION AND PACKAGING) REGULATIONS.

SI 1992/742 ROAD TRAFFIC (CARRIAGE OF DANGEROUS SUBSTANCES IN PACKAGES ETC.) REGULATIONS.

Regulatory Information

CHEMICALS (HAZARD INFORMATION AND PACKAGING FOR SUPPLY) REGULATIONS FOR SUPPLY 1994 (SI No. 3247) (CHIP2).

SUPPLY: HIGHLY FLAMMABLE AND IRRITANT

CONVEYANCE: FLAMMABLE LIQUID.

PHRASES:-

HIGHLY FLAMMABLE.

IRRITATING TO EYES.

KEEP CONTAINER TIGHTLY CLOSED.

KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING.

WEAR EYE/FACE PROTECTION.

Other Information: Training Advice

SOLVENT BLENDS, PARTICULARLY THOSE CONTAINING A SMALL QUANTITY OF KETONE IN A MAINLY ALCOHOLIC MIXTURE, ARE KNOWN TO FORM PEROXIDES ON PROLONGED STORAGE. IF THE SOLVENT IS BOILED DRY, THE PEROXIDE MAY EXPLODE.

THEREFORE, BEFORE DISTILLATION OR EVAPORATION SUCH BLENDS SHOULD BE TESTED FOR PEROXIDE CONTENTS.

THE PRODUCT IS UNDER REVIEW FOR CLASSIFICATION AS AN IRRITANT.

Other Information: Recommended uses and restrictions

USED AS A SOLVENT IN SURFACE COATINGS, ADHESIVES, COSMETICS AND PHARMACEUTICAL PRODUCTS.

USED AS A CHEMICAL INTERMEDIATE IN MANY ORGANIC SYNTHESIS.

Other Information: Data Sources

1. HSE GUIDANCE NOTE EH 40 OCCUPATIONAL EXPOSURE LIMITS (LATEST EDITION).
2. ACGIH (THRESHOLD LIMIT VALUES AND BIOLOGICAL EXPOSURE INDICES) 1985-86.
3. CHEMICALS (HAZARD INFORMATION AND PACKAGING FOR SUPPLY) REGULATIONS 1994 (SI No 3247) (CHIP 2).
4. IMO REPORTS AND STUDIES NO.35 (THE EVALUATION OF HAZARDS OF HARMFUL SUBSTANCES CARRIED BY SHIPS) 1989.
5. IMDG CODE (INTERNATIONAL MARITIME DANGEROUS GOODS CODES) 1990.
6. CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH REGULATIONS. (SI 1988/1657).
7. HSE GUIDANCE NOTE HS(G)71
8. HAZCHEM LIST NO.6 (EMERGENCY ACTION CODES AND SUPPLEMENTARY INFORMATION) 1990.

The MSDS complies with regulation 6 of CHIP2 which implements Article 27 of the Dangerous Substances Directive (67/548/EEC) as amended by the Seventh Amendment (92/32/EEC), Article 10 of the Dangerous Preparations Directive (88/379/EEC) and the Safety Data Sheets Directive (91/155/EEC as amended by Directive 93/112/EC).